

**Abstract**

The present invention provides systems and methods for decreasing interference in a selected coded signal. The system includes a matrix generator for generating a matrix. The matrix may comprise vectors; the elements of which are formed from components of the interference. The interference may exist in the form of co-channel and/or cross channel interference, such as that found in CDMA telephony. The components of this interference may, therefore, be code components of the interference that are used to fill elements of the vectors. Each element of a vector may represent a code component of an interfering coded signal. A processor uses the matrix to substantially remove the interference from the selected coded signal. For example, the processor may generate a projection operator that projects the coded signal substantially orthogonal to the interference such that the impact of interference on the selected coded signal is substantially reduced.